

FIG 1

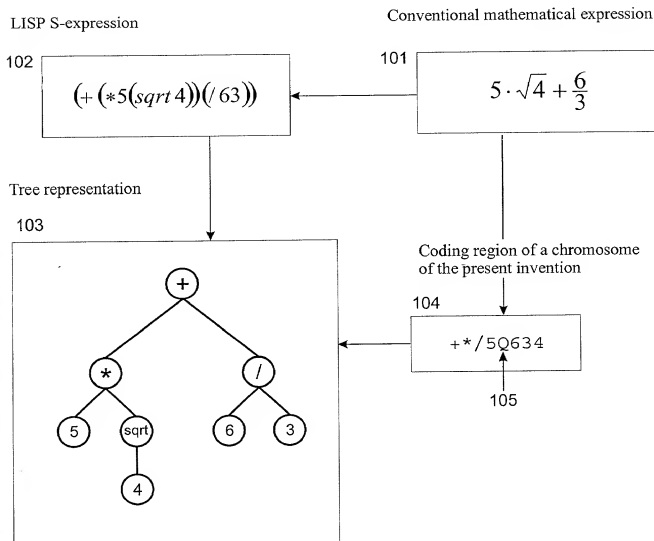


FIG 2

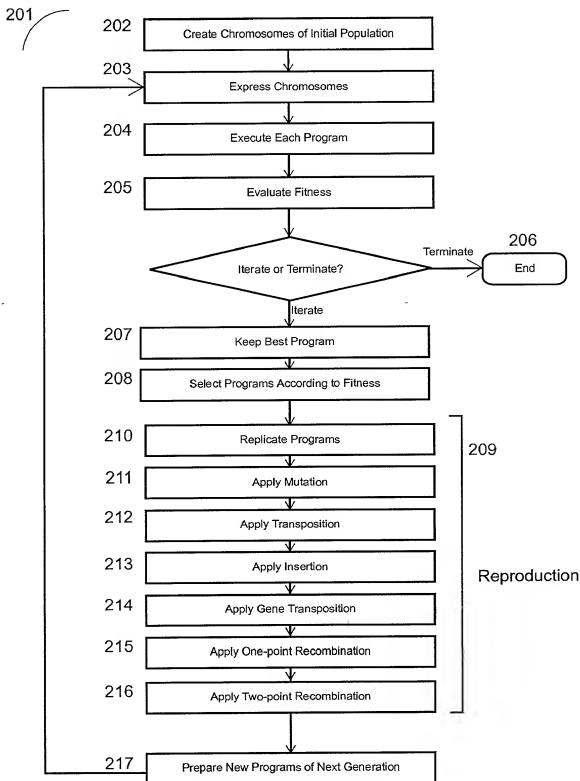
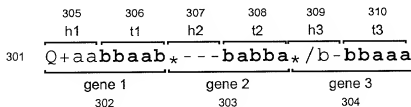


FIG 3



109070.28266860

FIG 4

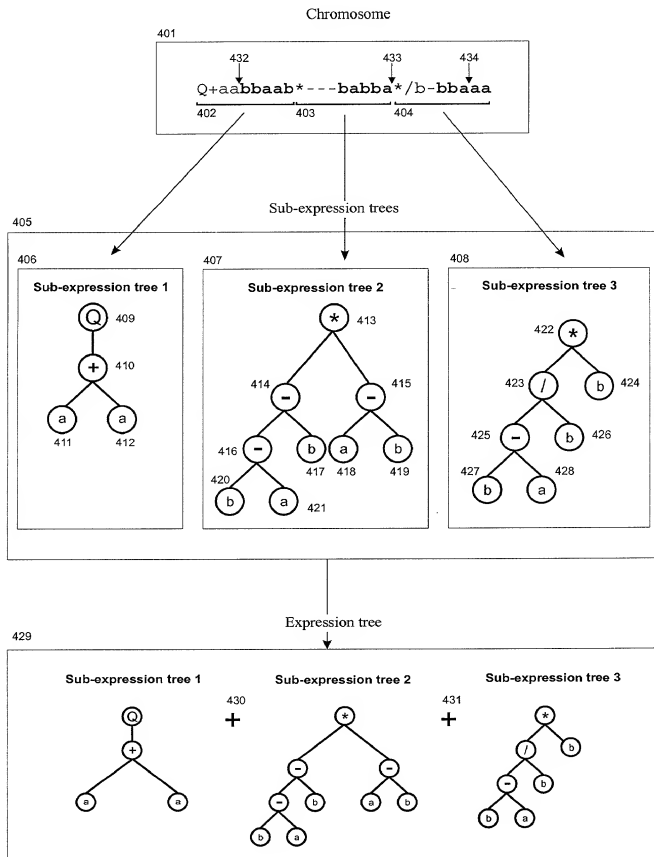
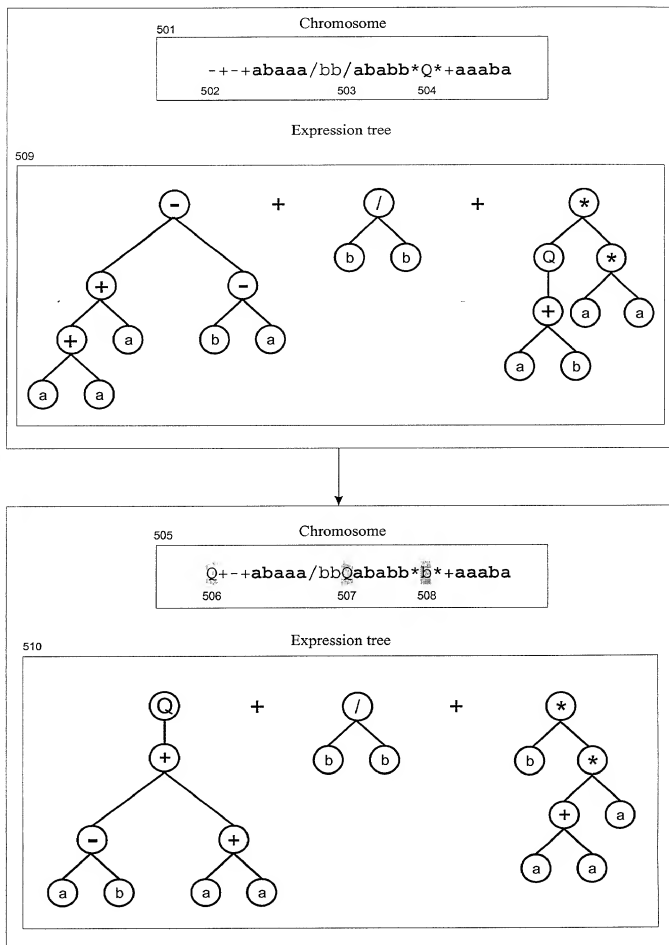


FIG 5



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FIG 6

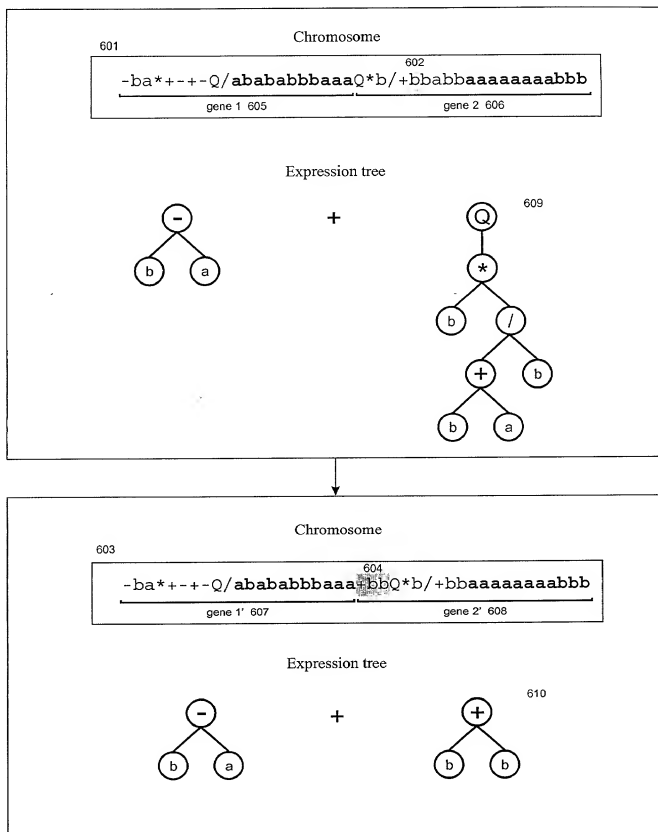


FIG 7

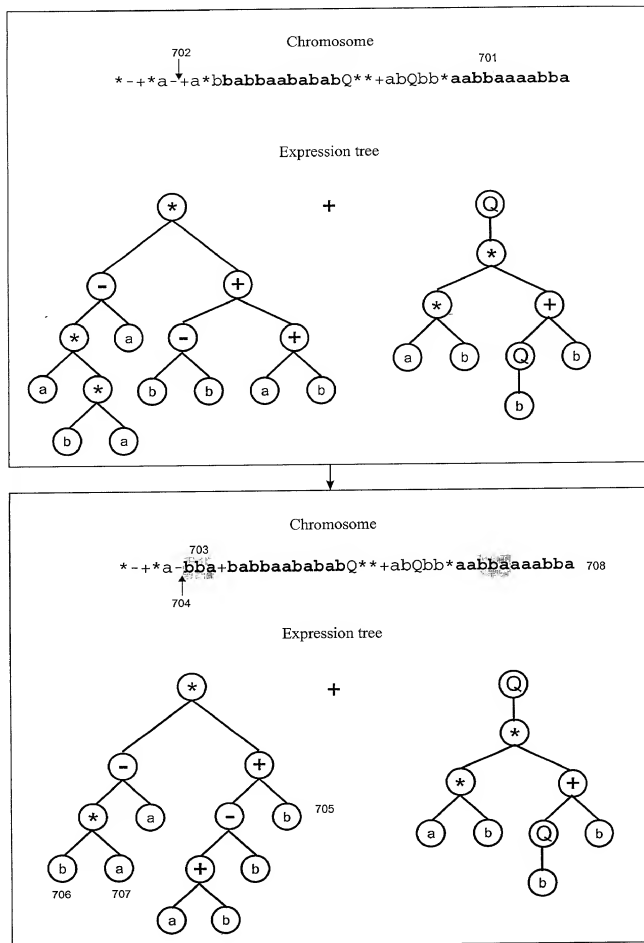
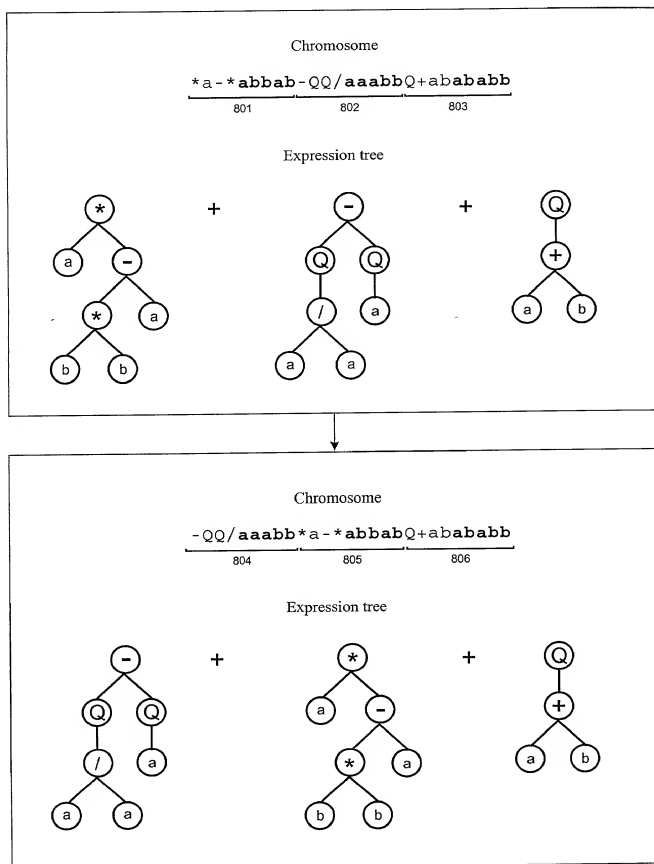


FIG 8



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FIG 9

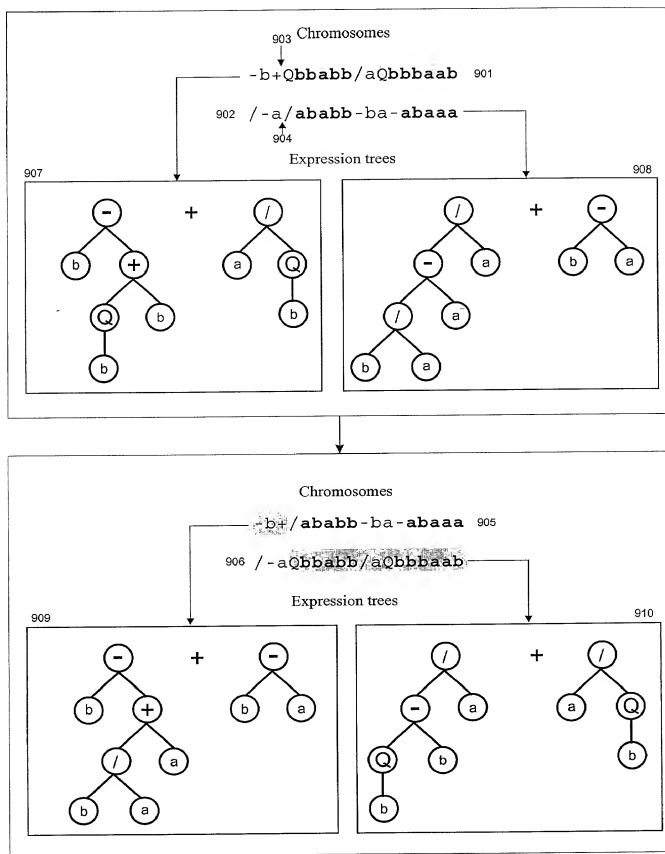


FIG 10A

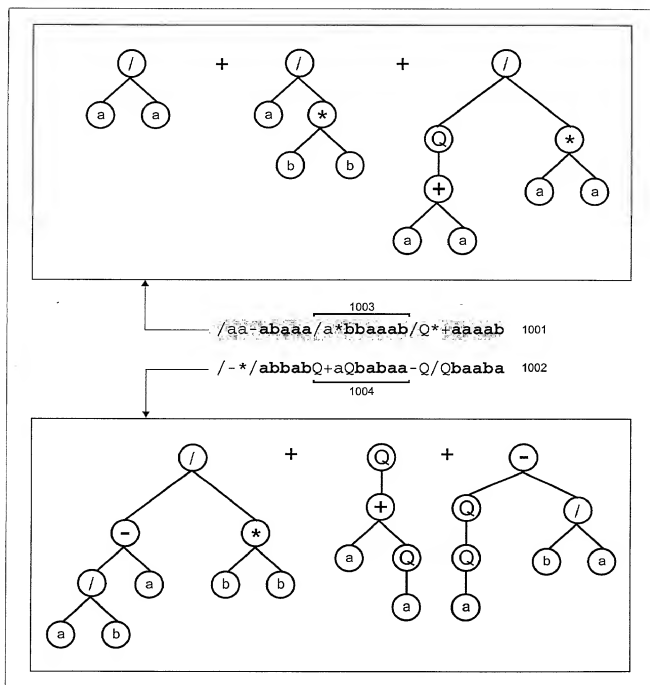


FIG 10B

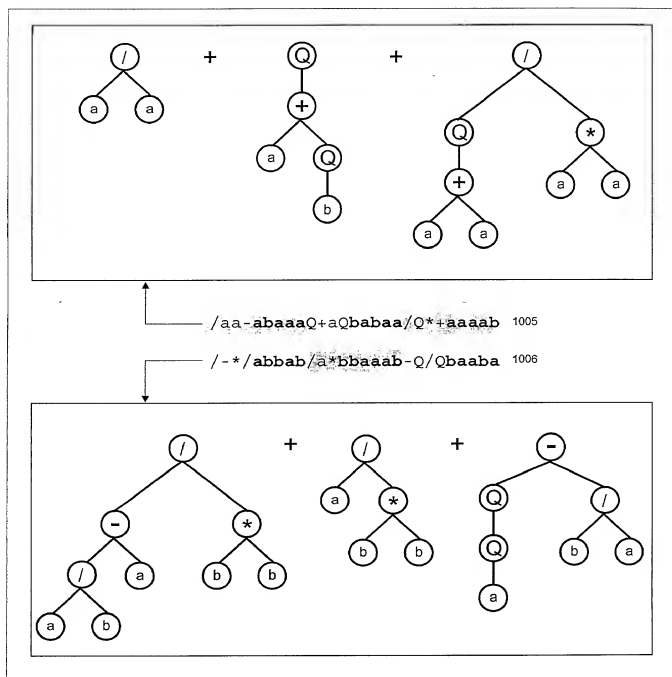


FIG 11

1101	Chromosomes	Fitness
	// */ -aaaaaa---+aaaaaa*++*aaaaaa*++*aaaaaa-[0]	= 0
	// */ /aaaaaa+ */ +aaaaaa*-a*aaaaaa-a*++aaaaaa-[1]	= 0
	+a*aaaaaa+---+aaaaaa*--aaaaaa*++*aaaaaa-[2]	= 73.35578
	+a*-aaaaaa/+a/aaaaaa-/*+aaaaaa* */ -aaaaaa-[3]	= 0
	+ / *+aaaaaa/a/+aaaaaa+/aa+aaaaaa* */ -+aaaaaa-[4]	= 26.6697
	++ / -aaaaaa/- */ /aaaaaa*++*aaaaaa/a*a-aaaaaa-[5]	= 0
	+++ / /aaaaaa-a*a*aaaaaa- / */ /aaaaaa/++*aaaaaa-[6]	= 25.44238
	*-- / -aaaaaa+a*aaaaaa-a** *aaaaaa+ / - * -aaaaaa-[7]	= 0
	-a+-aaaaaa*a* *aaaaaa*+a-aaaaaa/++*aaaaaa-[8]	= 22.67557
	+/-+aaaaaa*a/ *+aaaaaa/aa*+aaaaaa- / a-aaaaaa-[9]	= 0
	+a/+aaaaaa++ / -aaaaaa* */ /aaaaaa-a*-aaaaaa-[10]	= 35.0658
	-a-a*aaaaaa*++* /aaaaaa-+ / -aaaaaa*a/ + /aaaaaa-[11]	= 97.6903
	/aa*aaaaaa*++ / /aaaaaa/ *a* *aaaaaa+** /aaaaaa-[12]	= 45.73774
	-a-aaaaaa+ / *aaaaaa*-+ - *aaaaaa--a-aaaaaa-[13]	= 0
	++ / -aaaaaa-a/aaaaaa* */ - / +aaaaaa/++*aaaaaa-[14]	= 0
	++* / /aaaaaa* */ /aaaaaa/a-aaaaaa---+*aaaaaa-[15]	= 0
	/aa--aaaaaa+* */ /aaaaaa+*a/aaaaaa-/a++aaaaaa-[16]	= 7.7575
	++*--aaaaaa*++-aaaaaa+a+*aaaaaa/a* *-aaaaaa-[17]	= 0
	+++aaaaaa- / + -aaaaaa-a/ +aaaaaa*++- *aaaaaa-[18]	= 0
	+a-+aaaaaa/a+ /aaaaaa/ / *+aaaaaa* / a* /aaaaaa-[19]	= 0
	-a+-aaaaaa*aaa/aaaaaa+* / +aaaaaa*a/ + -aaaaaa-[20]	= 21.5497
	+ / +*aaaaaa+aa+ /aaaaaa* --- -aaaaaa/ +*a+aaaaaa-[21]	= 18.06512
	/aa-aaaaaa+ / / *aaaaaa*a+ - /aaaaaa- / * -aaaaaa-[22]	= 17.4636
	/ - / +aaaaaa/ - +*+aaaaaa/a/ - *aaaaaa+ - *+aaaaaa-[23]	= 0
	++* -aaaaaa/ *a- *aaaaaa/ - + -aaaaaa+ / - * /aaaaaa-[24]	= 27.9458
	- / ---aaaaaa-a*aaaaaa+--- -aaaaaa-+ / a+aaaaaa-[25]	= 0
	+---aaaaaa+ / +aaaaaa-a* /aaaaaa+* -a/aaaaaa-[26]	= 18.2736
	-*+a+aaaaaa/- / +aaaaaa*aa*aaaaaa/-a-aaaaaa-[27]	= 80.0881
	/ - + -aaaaaa* / - /aaaaaa/ - - +*aaaaaa/ - *+aaaaaa-[28]	= 0
	+* / /aaaaaa- * - +aaaaaa/ a/ +aaaaaa*a/ +aaaaaa-[29]	= 31.31912

Chromosome number

09609262 " 07/06/01

FIG 12

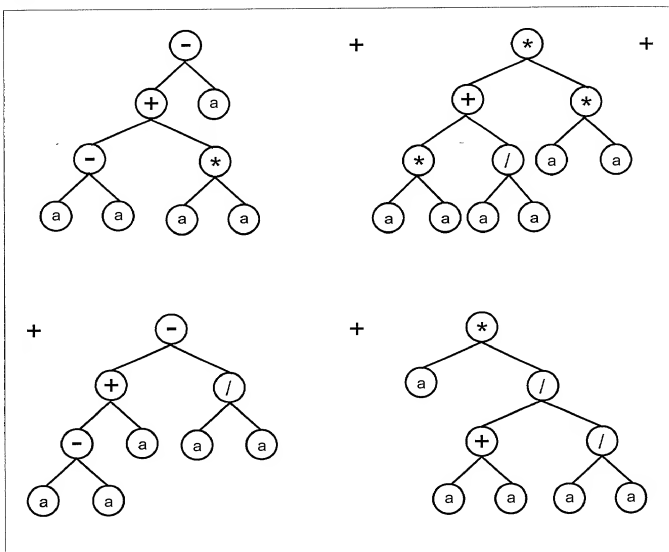
1201

Chromosome

-+a-*aaaaaa*+**/aaaaaa-+/-aaaaaaa*a/+aaaaaa

Expression tree

1202



Mathematical expression

1203

$$y = (a^2 - a) + (a^4 + a^2) + (a - 1) + (2a^2) = a^4 + 4a^2 - 1$$

FIG 13

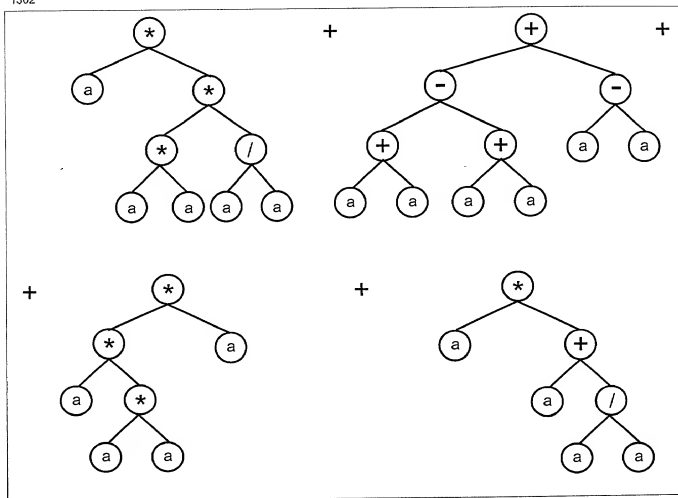
Chromosome

1301

***a** /aaaaaa+--+ +aaaaaa**aa*aaaaaa*a+a/aaaaaa**

Expression tree

1302



Mathematical expression

1303

$$y = (a^3) + (0) + (a^4) + (a^2 + a) = a^4 + a^3 + a^2 + a$$

FIG 14

	Present Invention	Genetic Programming
G	50	51
P	30	500
C	10	20
P _s	1	0.35
R _Z	1	11
F _Z	15,000	5,610,000

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FIG 15

Fitness cases' stacks

```
luaine###-0
unervsi##-1
auvse###-2
nalvuesri-3
s#####-4 1501
sluavn###-5
esiv#####-6
narsv####-7
vlera####-8
#####-9 1502
```

1503	Chromosomes	Fitness
	ApAAtuputCuRuputptAttCtptuu-[0]	= 1
	ARRpttutpAAupupuupNCRNuttuu-[1]	= 0
	CCRApttttCapNuptppRNAAttputp-[2]	= 1
	ANpNttuptCARptutuuNRpAttut-[3]	= 1
	ARCRtpptuRuuAppptpAttputptup-[4]	= 1
	ApuApuuuAARCutupuACNptpppu-[5]	= 0
	RARuputppCACapttupRRCNttutu-[6]	= 0
	AtAuppppuCuAtppptuNACAtttpp-[7]	= 1
	NtNAuputpACutppptuCuCRptppu-[8]	= 0
	NtANpptutAuRptpppuRpNAutupu-[9]	= 1
	AuuttttuRptRptttuRAARutupt-[10]	= 0
	CpNRtuuupCCCNpuppRptCuptuu-[11]	= 2
	RACAuptutCACTuuupNRtNptput-[12]	= 1
	AApNuuttpANCuptutuRCAutptup-[13]	= 0
	CtCututtuCAAAutptuANRNuttpt-[14]	= 0
	CAApptutCatNutppuAtpAtutut-[15]	= 1
	NpAauppuAAAUptpuuAttRtputt-[16]	= 1
	AARttuuuNAARtppuuAutuutpt-[17]	= 1
	ApRAutptNNAAppppuACTRptuup-[18]	= 0
	AAApppputRNACupptpACNttuptu-[19]	= 0
	CpRNppppuACANttuttNAAutput-[20]	= 2
	AtNAutttAuptttuupARRCtuppp-[21]	= 0
	CAAAtputuAtANptpupAptpuuut-[22]	= 1
	ARNRtuuupApAttptutApRnupuut-[23]	= 0
	RtNNTpuppCtAuuppuCAANpuutu-[24]	= 0
	RCAtuupttAutAptutpAAtAttuu-[25]	= 0
	RtuAuputtAAApptutRpRpptpuu-[26]	= 1
	CpAAtputuCCpNpttutAuRppupt-[27]	= 2
	AACRtpupuruAAtuptCAuuppuu-[28]	= 2
	RuAAputtuRACNuupptAuRppuupp-[29]	= 2

Chromosome number

FIG 16

Fitness cases' stacks

1601

rilasnvu#-0
rls#####-1
anruievls-2
nr#####-3
viaslre##-4
ievlanru#-5
uenari###-6
neai#####-7
li#####-8
#####-9

1602

1603 Chromosome

uNpNttuptCARpuutupNRpCtutut

Expression tree

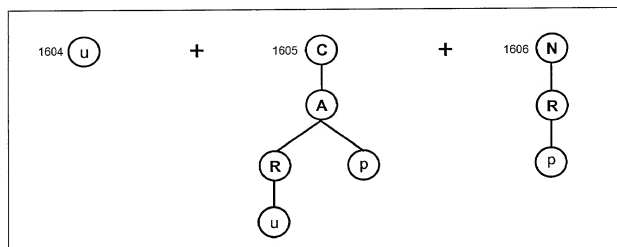


FIG 17

Fitness cases' stacks

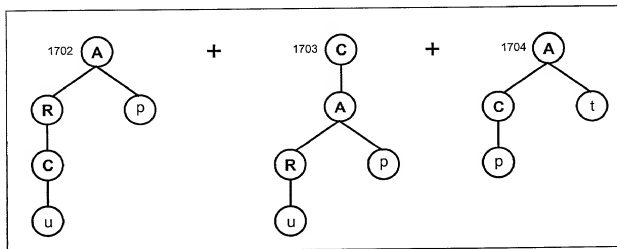
s#####-0
 vulnsiaer-1
 iuvr#####-2
 riev#####-3
 ui#####-4
 isunrl###-5
 uniav###-6
 lireav###-7
 ni#####-8
 #####-9

1701

Chromosome

ARpCututCARpuuuupACTptpuut

Expression tree



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FIG 18

Fitness cases' stacks

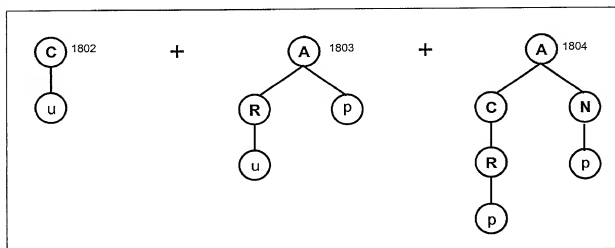
```
avnurle##-0
vsrui####-1
uerlvsnai-2
saelnu###-3
linv#####-4
sivnrlaeu-5
vulrsaine-6
esla#####-7
vnarlsei-8
#####-9
```

1801

Chromosome

CutputuptARpuuuttpACNRppuuu

Expression tree



00000000.070601
 109020.2020000

FIG 19

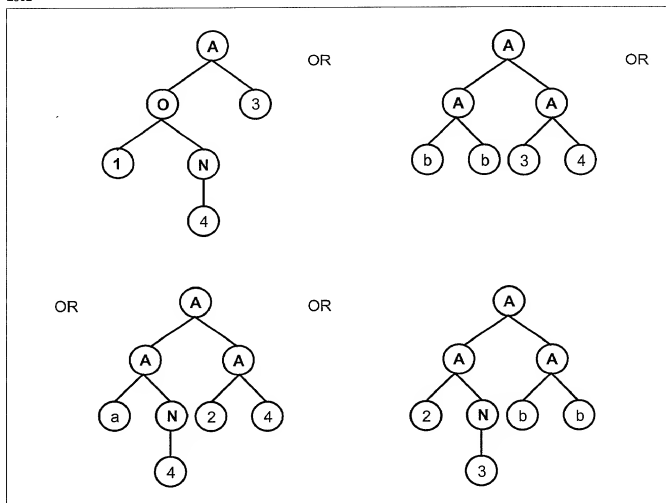
	Present Invention	Genetic Programming
G	100	51
P	30	500
C	10	167
P _s	0.70	0.767
R _z	4	4
F _z	120,000	17,034,000

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FIG 20

2001 Chromosome Fitness
 AO31N4322a4AAAbb342444AAaAN244bb3AAA2Nbb3a1b = 44

2002 Expression tree

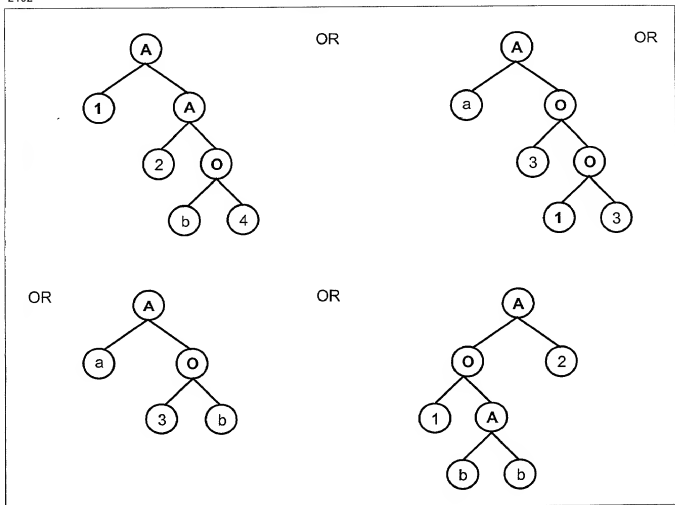


09899286.070601

FIG 21

2101 Chromosome Fitness
 A1A2Ob4443aAaO3O133311AaO3bbbb322AO21Abb4a33 = 132

2102 Expression tree



0989282.070601

FIG 22

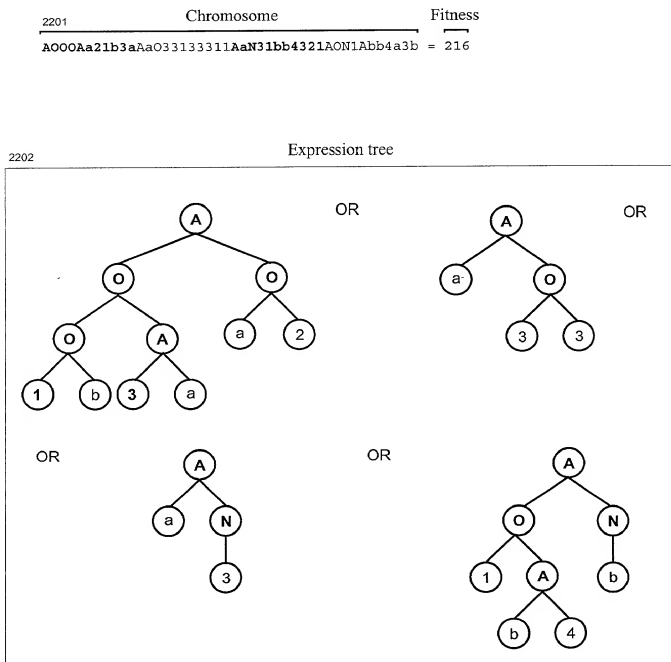
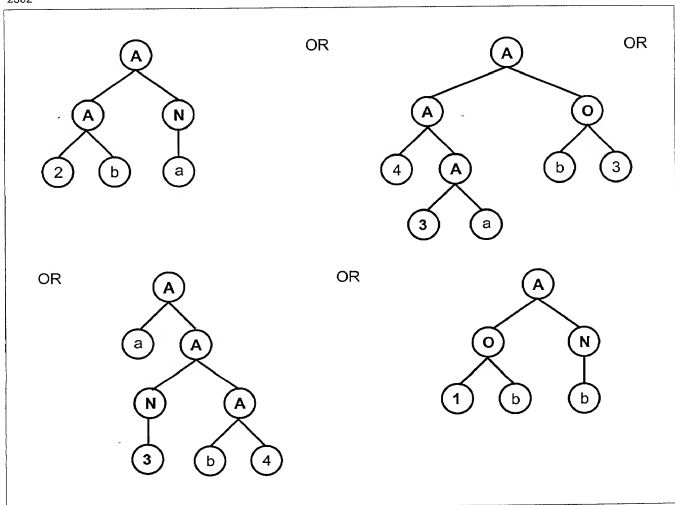


FIG 23

2301 Chromosome Fitness
 AAN2baa4b2bAAO4Ab33a31AaANA3b4312AON1bb1b233 = 310

2302 Expression tree



09899282.070601
 109020.2826666

FIG 24

